DOCUMENT RESUME

ED 444 128 CS 014 074

AUTHOR	Lyon, G. Reid
TITLE	Overview of Reading and Literacy Initiatives.
INSTITUTION	National Inst. of Child Health and Human Development (NIH), Bethesda, MD.
PUB DATE	1998-04-28
NOTE	19p.; Statement given to the Committee on Labor and Human Resources, Rm. 430, Senate Dirkson Bldg., Washington, DC, April 28, 1998. See CS 014 072-075 for related documents.
AVAILABLE FROM	For full text: http//www.nichd.nih.gov/publications/pubs/jeffords.htm.
PUB TYPE	Information Analyses (070) -- Reports - Descriptive (141)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Elementary Education; *Instructional Effectiveness; Literature Reviews; Longitudinal Studies; *Phonics; *Reading Comprehension; *Reading Difficulties; *Reading Instruction; *Reading Research; Teacher Education
IDENTIFIERS	*Reading Fluency

ABSTRACT

In the form of a statement to United States Senate Committee on Labor and Human Resources, this paper presents an overview of reading and literacy initiatives. It begins with a brief discussion of the seriousness of reading failure in the United States and then discusses longitudinal studies conducted by the National Institute of Child Health and Human Development that are underway to identify conditions that foster string reading development, risk factors that predispose youngsters to reading failure, and instructional procedures to ameliorate reading deficits. The remaining sections of the paper address the questions of: (1) how children learn to read; (2) why some children (and adults) have difficulties learning to read; and (3) how educators and others can help children learn to read--which teaching approaches are most beneficial for which children at which states of reading development. (RS)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 444 128

STATEMENT OF DR. G. REID LYON
CHIEF
CHILD DEVELOPMENT AND BEHAVIOR BRANCH
NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT
NATIONAL INSTITUTES OF HEALTH
9000 ROCKVILLE PIKE
BETHESDA, MD 20892

Committee on Labor and Human Resources
Room 430
Senate Dirkson Building
Washington, DC

April 28, 1998

OVERVIEW OF READING AND LITERACY INITIATIVES

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

CS 014 074

Chairman Jeffords and members of the committee, some children learn to read and write with ease. Even before they enter school, they have developed an understanding that the letters on a page can be sounded out to make words and some preschool children can even read words correctly that they have never seen before and comprehend what they have read. As Marilyn Adams has reported, before school, and without any great effort or pressure on the part of their parents, they pick up books, pencils, and paper, and they are on their way, almost as though by magic.

However, the magic of this effortless journey into the world of reading is available to only about 5% of our nation's children. It is suggested in the research literature that another 20% to 30% learn to read relatively easily once exposed to formal instruction, and it seems that youngsters in this group learn to read in any classroom, with any instructional emphasis.

Unfortunately, it appears that for about 60% of our nation's children, learning to read is a much more formidable challenge, and for at least 20% to 30% of these youngsters, reading is one of the most difficult tasks that they will have to master throughout their schooling. Why is this so unfortunate? Simply because if you do not learn to read and you live in America, you do not make it in life. Consider that reading skill serves as the major avenue to learning about other people, about history and social studies, the language arts, science, mathematics, and the other content subjects that must be mastered in school. When children do not learn to read, their general knowledge, their spelling and writing abilities, and their vocabulary development suffers in kind. Within this context, reading skill serves as the major foundational skill for all school-based learning, and without it, the chances for academic and occupational success are limited indeed. Because of its importance and visibility, particularly during the primary grades, difficulty learning to read squashes the excitement and love for learning that many youngsters enter school with. It is embarrassing and even devastating to read slowly and laboriously and to demonstrate this weakness in front of peers on a daily basis. It is clear from our NICHD-supported longitudinal studies that follow good and poor readers from kindergarten into young adulthood that our young poor readers are not used to such failure. By the end of the first grade, we begin to notice substantial

decreases in the children's self-esteem, self-concept, and motivation to learn to read if they have not been able to master reading skills and keep up with their age-mates. As we follow the children through elementary and middle-school grades these problems compound, and, in many cases very bright youngsters are unable to learn about the wonders of science, mathematics, literature and the like because they can not read the grade-level textbooks. By high school, these children's potential for entering college has decreased to almost nil, with few choices available to them with respect to occupational and vocational opportunities. These individuals constantly tell us that they hate to read, primarily because it is such hard work, and their reading is so slow and laborious. As one adolescent in one of our longitudinal studies remarked recently, "I would rather have a root canal than read ".

While failure to learn to read adequately is much more likely among poor children, among nonwhite children, and among nonnative speakers of English, recent data derived from the National Assessment of Educational Progress (1994) reveals an alarming trend. In the State of California, 59% of fourth grade children had little or no mastery of the knowledge and skills necessary to perform reading activities at the fourth grade level, compared to a national average of 44% below basic reading levels. Even more alarming, is that this evidence of serious reading failure cuts across all ethnic and socioeconomic variables. While 71% of African-Americans, 81% of Hispanics and 23% of Asians were reading below basic levels, 44% of white students in the fourth grade were also below the basic reading level necessary to use reading as a skill. Moreover, 49% of the fourth grade children in California who were reading below basic levels were from homes where the parents had graduated from college. In fact, the children of college-educated parents in California scored lowest with respect to their national cohort. These data underscore the fact that reading failure is a serious national problem and can not simply be attributed to poverty, immigration, or the learning of English as a second language. The psychological, social, and economic consequences of reading failure are legion.

It is for this reason that the National Institute of Child Health and Human Development (NICHD) within the National Institutes of Health (NIH) considers reading failure to reflect not only an educational problem, but a significant public health problem as well. Within this context, a large research network consisting of 41 research sites in North America, Europe,

and Asia are working hard to identify (1) the critical environmental, experiential, cognitive, genetic, neurobiological, and instructional conditions that foster strong reading development; (2) the risk factors that predispose youngsters to reading failure; and (3) the instructional procedures that can be applied to ameliorate reading deficits at the earliest possible time. The NICHD has supported research to understand normal reading development and reading difficulties continuously since 1965. During the past 33 years, NICHD supported scientists have studied the reading development of 34,501 children and adults. Many studies have been devoted to understanding the normal reading process, and 21,860 good readers have participated in investigations, some for as long as 12 years. Significant effort has also been deployed to understand why many children do not learn to read. To address this critical question, 12,641 individuals with reading difficulties have been studied, many for as long as 12 years. In addition, since 1985, the NICHD has initiated studies designed to develop early identification methods that can pinpoint children during kindergarten and the first grade who are at-risk for reading failure. These studies have provided the foundation for several prevention and early intervention projects now underway at 11 sites in the U.S. and Canada. Since 1985, 7,669 children (including 1,423 good readers) have participated in these reading instruction studies, and 3,600 youngsters are currently enrolled in longitudinal early intervention studies in Texas, Washington, Georgia, Massachusetts, New York, Florida, Colorado, North Carolina, and Washington, D.C. These studies have involved the participation of 1,012 classroom teachers, working in 266 schools and 985 classrooms. (A summary of the NICHD Reading Research Program is included with this testimony). With this as background, my remaining testimony will focus on addressing several major questions that may be of interest to the Committee on Labor and Human Resources on the topic of Reading and Literacy Initiatives. These questions are:

1. How Do Children Learn To Read?

2. Why Do Some Children (and Adults) Have Difficulties Learning to Read?

3. How Can We Help Children Learn to Read? For Which Children are Which Teaching Approaches Most Beneficial at Which States of Reading Development?

HOW DO CHILDREN LEARN TO READ

UNDERSTANDING HOW SOUNDS ARE CONNECTED TO PRINT

In general, learning to read the English language is not as easy as conventional wisdom would suggest. Every type of writing system whether it be a syllabic system as used by the Japanese, a morphosyllabic system as used by the Chinese (where a written symbol represents a unit of meaning), or an alphabetic system that is used in English, Spanish, and Scandinavian languages (to name a few) present challenges to the beginning reader. For example, in an English alphabetic system, the individual letters on the page are abstract and meaningless, in and of themselves. They must eventually be linked to equally abstract sounds, called phonemes, blended together, and pronounced as words, where meaning is finally realized. To learn to read English, the child must figure out the relationship between sounds and letters. Thus, the beginning reader must learn the connections between the 40 or so sounds of spoken English (the phonemes), and the 26 letters of the alphabet. What our NICHD research has taught us is that in order for a beginning reader to learn how to connect or translate printed symbols (letters and letter patterns) into sound, the would-be reader must understand that our speech can be segmented or broken into small sounds (phoneme awareness) and that the segmented units of speech can be represented by printed forms (phonics). This understanding that written spellings systematically represent the phonemes of spoken words (termed the alphabetic principle) is absolutely necessary for the development of accurate and rapid word reading skills.

Why is phoneme awareness so critical for the beginning reader? Because if children cannot perceive the sounds in spoken words – for example, if they cannot "hear" the "at" sound in "fat" and "cat" and perceive that the difference lies in the first sound - they will have difficulty decoding or "sounding out" words in a rapid and accurate fashion. This awareness of the sound structure of our language seems so easy and commonplace that we take it for granted. But many children do not develop phoneme awareness, and for some interesting reasons that we are now beginning to understand. Unlike writing, the speech we use to communicate orally does not consist of separate sounds in words. For example, while a written word like "cat" has three letter-sound units, the ear hears only one sound, not three, when the word "cat" is spoken aloud. This merging and overlapping of sounds into a sound "bundle" makes oral communication much more efficient. Consider

how long it would take to have a conversation if each of the words that we uttered were segmented or "chopped" into their sound structure. In essence we would be spelling aloud the words that we were speaking. From the NICHD studies that were initiated in 1965 to understand how the reading process develops, we now have strong evidence that it is not the ear that understands that a spoken word like "cat" is divided into three sounds and that these discrete sounds can be linked to the letters C-A-T, it is the brain that performs this function. In some youngsters, the brain seems to have an easy time processing this type of information. However, in many children, the skill is only learned with difficulty, and thus must be taught directly, explicitly, and by a well trained and informed teacher. It has also become clear to us that the development of these critical early reading-related skills such as phoneme awareness and phonics are fostered when children are read to at home during the preschool years, when they learn their letter and number names, and when they are introduced at very early ages to concepts of print and literacy activities.

Does this mean that children who have a difficulty understanding that spoken words are composed of discrete individual sounds that can be linked to letters suffer from brain dysfunction or damage? Not at all. It simply means that the neural systems that perceive the phonemes in our language are less efficient than in other children. This difference in neural efficiency can also be hypothesized to underlie the individual differences that we see every day in learning any skill such as singing, playing an instrument, constructing a house, painting a portrait, and the like. In some cases, our NICHD studies have taught us that the phonological differences we see in good and poor readers have a genetic basis. In other children, the differences seem to be attributable to a lack of exposure to language patterns and literacy-based interactions and materials during the preschool years.

As pointed out, the development of phoneme awareness, the development of an understanding of the alphabetic principle, and the translation of these skills to the application of phonics in reading words are non-negotiable beginning reading skills that ALL children must master in order to understand what they read and to learn from their reading sessions. Printed letters and words are the basic data on which reading depends, and the emerging reader must be able to recognize accurately and quickly spelling patterns and their mappings to speech. To recapitulate, these skills are supported nicely when children receive an abundance of early literacy experiences in the home and in preschool. But the development of phoneme

awareness and phonics, while NECESSARY, are NOT SUFFICIENT, for learning to read the English language so that meaning can be derived from print. In addition to learning how to "sound out" new and/or unfamiliar words, the beginning reader must eventually become proficient in reading, at a very fast pace, larger units of print such as syllable patterns, meaningful roots, suffixes, and whole words.

THE DEVELOPMENT OF READING FLUENCY

While the ability to read words accurately is a NECESSARY skill in learn to read, the speed at which this is done becomes a critical factor in ensuring that children understand what they read. As one child recently remarked, "if you don't ride a bike fast enough, you fall off". Likewise, if the reader does not recognize words quickly enough, the meaning will be lost. Although the initial stages of reading for many students require the learning of phoneme awareness and phonics principles, substantial practice of those skills, and continual application of those skills in text, fluency and automaticity in decoding and word recognition must be acquired as well. Consider that a young reader (and even older readers for that matter) has only so much attentional capacity and cognitive energy to devote to a particular task. If the reading of the words on the page is slow and labored, the reader simply cannot remember what they have read, much less relate the ideas they have read about to their own background knowledge. Children vary in the amount of practice that is required for fluency and automaticity in reading to occur. Some youngsters can read a word only once to recognize it again with greater speed; others need more than 20 or more exposures. The average child needs between four and 14 exposures to automatize the recognition of a new word. Therefore, in learning to read, it is vital that children read a large amount of text at their independent reading level (95% accuracy), and that the text format provides specific practice in the skills being learned.

CONSTRUCTING MEANING FROM PRINT

The ultimate goal of reading instruction is to enable children to understand what they read. Again, the development of phoneme awareness, phonics skills, and the ability to read words fluently and automatically are NECESSARY but NOT SUFFICIENT for the construction of meaning from text. The ability to understand what is read appears to be based on several factors. Children who comprehend well, seem to be able to activate their relevant background knowledge when reading - that is, they can relate what

is on the page to what they already know. Good comprehenders also have good vocabularies, since it is extremely difficult to understand something you can not define. Good comprehenders also have a knack for summarizing, predicting, and clarifying what they have read, and frequently use questions to guide their understanding. Good comprehenders are also facile in employing the sentence structure within the text to enhance their comprehension.

In general, if children can read the words on a page accurately and fluently, they will be able to construct meaning at two levels. At the first level, literal understanding is achieved. However, constructing meaning requires far more than literal comprehension. Children must eventually guide themselves through text by asking questions like. "Why am I reading this and how does this information relate to my reasons for doing so?', "What is the author's point of view?", " Do I understand what the author is saying and why?", "Is the text internally consistent?", and so on. It is this second level of comprehension that leads readers to reflective, purposeful understanding.

The development of reading comprehension skills, like the development of phoneme awareness, phonics, and fluency, needs to be fostered by highly trained teachers. Recent research shows that the teacher must arrange for opportunities for students to discuss the highlights of what they have read and any difficulties they have had when reading. Because the grammatical structures of written text are more varied and complex than those of casual, oral language (speaking to one another), regular exploration and explicit instruction on formal syntax is warranted. Children's reflections on what they have read can also be directly fostered through instruction in comprehension strategies. These sorts of discussions and activities should be conducted throughout a range of literacy genres, both fiction and nonfiction, and should be a regular component of the language arts curriculum throughout the children's school years.

OTHER FACTORS THAT INFLUENCE LEARNING TO READ

Our research continues to converge on the following findings. Good readers are phonemically aware and understand the alphabetic principle and can apply these skills to the development and application of phonics skills when reading words, and can accomplish these applications in a fluent and accurate manner. Given the ability to rapidly and automatically decode and recognize words, good readers bring strong vocabularies and good syntactic

and grammatical skills to the reading comprehension process, and actively relate what is being read to their own background knowledge via a variety of strategies. But what factors can provide a firm foundation for these skills to develop?

It is clear from research on emerging literacy that learning to read is a relatively lengthy process that begins very early in development and clearly before children enter formal schooling. Children who receive stimulating literacy experiences from birth onward appear to have an edge when it comes to vocabulary development, an understanding of the goals of reading, and an awareness of print and literacy concepts. Children who are read to frequently at very young ages become exposed in interesting and exciting ways to the sounds of our language, to the concept of rhyming, and to other word and language play that serves to provide the foundation for the development of phoneme awareness. As children are exposed to literacy activities at young ages, they begin to recognize and discriminate letters. Without a doubt, children who have learned to recognize and print most letters as preschoolers will have less to learn upon school entry. The learning of letter names is also important because the names of many letters contain the sounds they most often represent, thus orienting youngsters early to the alphabetic principle or how letters and sounds connect. Ultimately, children's ability to understand what they are reading is inextricably linked to their background knowledge. Very young children who are provided opportunities to learn, think, and talk about new areas of knowledge will gain much from the reading process. With understanding comes the clear desire to read more and to read frequently, ensuring that reading practice takes place.

WHY DO SOME CHILDREN (AND ADULTS) HAVE DIFFICULTIES LEARNING TO READ?

Difficulties learning to read result from a combination of factors. In general, children who are most at-risk for reading failure are those who enter school with limited exposure to language and who have little prior understanding of concepts related to phonemic sensitivity, letter knowledge, print awareness, the purposes of reading, and general verbal skills, including vocabulary. Children raised in poverty, youngsters with limited proficiency in English, children with speech and hearing impairments, and children from homes where the parent's reading levels are low are relatively predisposed to reading failure. Likewise, youngsters with subaverage intellectual

capabilities have difficulties learning to read, particularly in the reading comprehension domain.

Given this general background, recent research has been able to identify and replicate findings which point to at least four factors that hinder reading development among children irrespective of their socioeconomic level and ethnicity. These four factors include deficits in phoneme awareness and the development of the alphabetic principle (and the accurate and fluent application of these skills to textual reading), deficits in acquiring reading comprehension strategies and applying them to the reading of text, the development and maintenance of motivation to learn to read, and the inadequate preparation of teachers.

DEFICITS IN PHONEME AWARENESS AND THE DEVELOPMENT OF THE ALPHABETIC PRINCIPLE

In essence, children who have difficulties learning to read can be readily observed. The signs of such difficulty are: a labored approach to decoding or "sounding" unknown or unfamiliar words and repeated misidentification of known words. Reading is hesitant and characterized by frequent starts and stops and multiple mispronunciations. If asked about the meaning of what has been read, the child frequently has little to say. Not because he or she is not smart enough; in fact, many youngsters who have difficulty learning to read are bright and motivated to learn to read - at least initially. Their poor comprehension occurs because they take far too long to read the words, leaving little energy for remembering and understanding what they have read.

Unfortunately, there is no way to bypass this decoding and word recognition stage of reading. A deficiency in these skills cannot be appreciably offset by using context to figure out the pronunciation of unknown words. In essence, while one learns to read for the fundamental purpose of deriving meaning from print, the key to comprehension starts with the immediate and accurate reading of words. In fact, difficulties in decoding and word recognition are at the core of most reading difficulties. To be sure, there are some children who can read words accurately and quickly yet do have difficulties comprehending, but they constitute a small portion of those with reading problems.

If the ability to gain meaning from print is dependent upon fast, accurate, and automatic decoding and word recognition, what factors hinder the acquisition of these basic reading skills? As mentioned above, young children who have a limited exposure to both oral language and print before they enter school are at-risk for reading failure. However, many children with robust oral language experience, average to above intelligence and frequent interactions with books since infancy show surprising difficulties learning to read. Why?

In contrast to good readers who understand that segmented units of speech can be linked to letters and letter patterns, poor readers have substantial difficulty developing this "alphabetic principle". The culprit appears to be a deficit in phoneme awareness – the understanding that words are made up of sound segments called phonemes. Difficulties in developing phoneme awareness can have genetic and neurobiological origins or can be attributable to a lack of exposure to language patterns and usage during the preschool years. The end result is the same however. Children who lack phoneme awareness have difficulties linking speech sounds to letters - their decoding skills are labored and weak, resulting in extremely slow reading. This labored access to print renders comprehension impossible. Thus the purpose for reading is nullified because the children are too dysfluent to make sense out of what they read.

In studying approximately 34,501 thousand children over the past 33 years, we have learned the following with respect to the role that phonemic awareness plays in the development of phonics skills and fluent and automatic word reading:

1. Phonemic awareness skills assessed in kindergarten and first grade serve as potent predictors of difficulties learning to read. We have learned how to measure phonemic awareness skills as early as the first semester in kindergarten with tasks that take only 15 minutes to administer - and over the past decade we have refined these tasks so that we can predict with approximately 80% to 90% accuracy who become good readers and who will have difficulties learning to read.

2. We have learned that the development of phonemic awareness is a necessary but not sufficient condition for learning to read. A child must integrate phonemic skills into the learning of phonics principles, must practice reading so that word recognition becomes rapid and accurate,

and must learn how to actively use comprehension strategies to enhance meaning.

3. We have begun to understand how genetics are involved in learning to read, and this knowledge may ultimately contribute to our prevention efforts through the assessment of family reading histories.

4. We are entering very exciting frontiers in understanding how early brain development can provide a window on how reading develops. Likewise, we are conducting studies to help us understand how specific teaching methods change reading behavior and how the brain changes as reading develops.

5. We have learned that just as many girls as boys have difficulties learning to read. Until five years ago, the conventional wisdom was that many more boys than girls had such difficulties. Now females should have equal access to screening and intervention programs.

6. We have learned that for 90% to 95% of poor readers, prevention and early intervention programs that combine instruction in phoneme awareness, phonics, fluency development, and reading comprehension strategies, provided by well trained teachers, can increase reading skills to average reading levels. However, we have also learned that if we delay intervention until nine-years-of-age, (the time that most children with reading difficulties receive services), approximately 75% of the children will continue to have difficulties learning to read throughout high school. To be clear, while older children and adults can be taught to read, the time and expense of doing so is enormous.

DEFICITS IN ACQUIRING READING COMPREHENSION STRATEGIES

Some children encounter obstacles in learning to read because they do not derive meaning from the material that they read. In the later grades, higher order comprehension skills become paramount for learning. Reading comprehension places significant demands on language comprehension and general verbal abilities. Constraints in these areas will typically limit comprehension. In a more specific vein, deficits in reading comprehension are related to: (1) inadequate understanding of the words used in the text; (2)

inadequate background knowledge about the domains represented in the text; (3) a lack of familiarity with the semantic and syntactic structures that can help to predict the relationships between words; (4) a lack of knowledge about different writing conventions that are used to achieve different purposes via text (humor, explanation, dialogue, etc.); (5) verbal reasoning ability which enables the reader to "read between the lines", and (6) the ability to remember verbal information.

If children are not provided early and consistent experiences that are explicitly designed to foster vocabulary development, background knowledge, the ability to detect and comprehend relationships among verbal concepts, and the ability to actively employ strategies to ensure understanding and retention of material, reading failure will occur no matter how robust word recognition skills are.

Our current understanding of how to develop many of these critical language and reasoning capabilities related to reading comprehension is not as well developed as the information related to phoneme awareness, phonics, and reading fluency. We have not yet obtained clear answers with respect to why some children have a difficult time learning vocabulary and how to improve vocabulary skills. Our knowledge about the causes and consequences of deficits in syntactical development is sparse. A good deal of excellent research has been conducted on the application of reading comprehension strategies, but our knowledge of how to teach children to apply these strategies in an independent manner and across contexts is just emerging.

THE DEVELOPMENT AND MAINTENANCE OF MOTIVATION TO LEARN TO READ

A major factor that aids or limits the amount of improvement that a child may make in reading is highly related to their motivation to persist in learning to read despite difficulties. Very little is known with respect to the exact timing and course of motivational problems in reading development, but it is clear that reading failure has a devastating effect on children. In the primary grades, reading activities constitute the major portion of academic activities undertaken in classrooms, and children who struggle with reading are quickly noticed by peers and teachers. Although most children enter formal schooling with positive attitudes and expectations for success, those who encounter difficulties learning to read clearly attempt to avoid engaging in reading behavior as early as the middle of the first grade year. It is known

that successful reading development is predicated on practice in reading, and obviously the less a child practices, the less developed the various reading skills will become.

To counter these highly predicable declines in the motivation to learn to read, prevention and early intervention programs are critical.

INADEQUATE PREPARATION OF TEACHERS

As evidence mounts that reading difficulties originate in large part from difficulties in developing phoneme awareness, phonics, reading fluency, and reading comprehension strategies, the need for informed instruction for the millions of children with insufficient reading skills is an increasingly urgent problem. Unfortunately, several recent studies and surveys of teacher knowledge about reading development and difficulties indicate that many teachers are under prepared to teach reading. Most teachers receive little formal instruction in reading development and disorders during either undergraduate and/or graduate studies, with the average teacher completing only two reading courses. Surveys of teachers taking these courses indicate: (A) teachers rarely have the opportunity to observe professors demonstrate instructional reading methods with children; (B) course work is superficial and typically unrelated to teaching practice; and 8 the supervision of student teaching and practicum experiences is fragmentary and inconsistent. At present, motivated teachers are often left to obtain specific skills in teaching phonemic awareness, phonics, reading fluency, and comprehension on their own by seeking out workshops or specialized instructional manuals.

Teachers who instruct youngsters who display reading difficulties must be well versed in understanding the conditions that have to be present for children to develop robust reading skills. They also must be thoroughly trained to assess and identify children at-risk for reading failure at early ages. Unfortunately, many teachers and administrators have been caught between conflicting schools of though about how to teach reading and how to help students who are not progressing easily. In reading education, teachers are frequently presented with a "one Size Fits All" philosophy that emphasizes either a "whole language" or "phonics" orientation to instruction. No doubt, this parochial type of preparation places many children at continued risk for reading failure since it is well established that no reading program should be without all the major components of reading instruction (phoneme awareness, phonics, fluency, reading comprehension) and the real

question is which children need what, how, for how long, with what type of teacher, and in what type of setting.

It is hard to find disagreement in the educational community that the direction and fabric of teacher education programs in language arts and reading must change. However, bringing about such change will be difficult. In addition, if teacher preparation in the area of language and reading is expected to become more thoughtful and systematic, changes in how teaching competencies and certification requirements are developed and implemented is a must. Currently, in many states, the certification offices within state departments of education do not maintain formal and collaborative relationships with academic departments within colleges of education. Thus, the requirements that a student may be expected to satisfy for a college degree may bear little relationship to the requirements for a teaching certificate. More alarming is the fact that both university and state department of education requirements for the teaching of reading may not reflect, in any way, the type and depth of knowledge that teachers must have to ensure literacy for all.

FOR WHICH CHILDREN ARE WHICH TEACHING APPROACHES MOST BENEFICIAL AT WHICH STAGES OF READING DEVELOPMENT?

1. Learning to read is a lengthy and difficult process for many children, and success in learning to read is based in large part on developing language and literacy-related skills very early in life. A massive effort needs to be undertaken to inform parents, and the educational and medical communities of the need to involve children in reading from the first days of life - to engage children in playing with language through nursery rhymes, storybooks, and writing activities. To bring to children as early as possible experiences that help them understand the purposes of reading, and the wonder and joy that can be derived from reading. Parents must become intimately aware of the importance of vocabulary development and the use of verbal interactions with their youngsters to enhance grammar, syntax, and verbal reasoning.

2. Young preschool children should be encouraged to learn the letters of the alphabet, to discriminate letters from one another, to print letters, and to attempt to spell words that they hear. By introducing young children to print, their exposure to the purposes of reading and writing

will increase and their knowledge of the conventions of print and their awareness of print concepts will increase.

3. Reading out loud to children is a proven activity for developing vocabulary growth and language expansion and plays a causal role in developing both receptive and expressive language capabilities. Reading out loud can also be used to enhance children's background knowledge of new concepts that may appear in both oral and written language.

4. Our NICHD prevention and early intervention studies in Houston, Tallahassee, Albany, Syracuse, Atlanta, Boston, Seattle, and Washington, D.C. all speak to the importance of early identification and intervention with children at-risk for reading failure. Procedures now exist to identify such children with good accuracy. This information needs to be widely disseminated to schools, teachers, and parents.

5. Kindergarten programs should be designed so that all children will develop the prerequisite phonological, vocabulary, and early reading skills necessary for success in the first grade. All children should acquire the ability to recognize and print both upper and lowercase letters with reasonable ease and accuracy, develop familiarity with the basic purposes and mechanisms of reading and writing, and develop age-appropriate language comprehension skills.

6. Beginning reading programs should be constructed to ensure that adequate instructional time is allotted to the teaching of phonemic awareness skills, phonics skills, the development of reading fluency and automaticity, and the development of reading comprehension strategies. All of these components of reading are necessary but not sufficient in and of themselves. For children demonstrating difficulty in learning to read, it is imperative that each of these components be taught within an integrated context and that ample practice in reading familiar material be afforded. For some children, our research demonstrates that explicit, systematic instruction is crucial in helping them to understand and apply critical phonemic, phonics, fluency, and reading comprehension skills. Even for children who seem to grasp reading concepts easily, learning to read is not a natural process -

reading instruction must be thoughtful, planned, and must incorporate the teaching of all the critical reading skills.

7. A major impediment to serving the needs of children demonstrating difficulties learning to read is current teacher preparation practices. Many teachers lack basic knowledge about the structure of the English language, reading development, and the nature of reading difficulties. Major efforts should be undertaken to ensure that colleges of education possess the expertise and commitment to foster expertise in teachers at both preservice and in service levels.

8. The preparation of teachers and the teaching of reading in our nation's classrooms must be based upon research evidence of the highest caliber and relevance. Research that is used to guide policy and instructional practice should be characterized by methodological rigor and the convergence of studies demonstrated to be representative, reliable, valid and described with sufficient clarity and specificity to permit independent replication. Moreover, we must realize that no one study or type of research methodology can be used to guide practice. To reiterate a significant point, the research knowledge that is employed to guide policy and practice must inform us how different components of reading behavior are best developed by various approaches to reading instruction for children of differing backgrounds, learning characteristics, and literacy experiences.

In short, both the provision of quality reading instruction to our nation's children and the preparation of teachers are critically dependent upon the development of a body of knowledge about reading development, reading instruction, and reading difficulties thatreflects the tremendous developmental complexity inherent in the study of individual differences and the substantial contextual complexity inherent in studying children, teachers, and student-teacher interactions in classrooms. For too long, the educational enterprise in this country has gravitated toward a "one-size-fits-all" solution to both research methods and classroom teaching practices. For example debates persist about the merits of conducting quantitative research studies versus qualitative/descriptive research studies. Likewise, the debate about code-based instruction versus whole language (literature-based) instruction continues to distract and confuse. Why such parochial and superficial discussions continue to drive current trends in research, teacher preparation,

and classroom reading instruction is beyond my analytic capability, but I do know that we have to begin to invest more and invest differently in our research infrastructure if we are to ever understand the complexity of reading development and optimal ways to provide reading instruction.

There is no doubt that the research of the future must combine research strategies that are experimentally responsible, test specific well defined ideas, yield data that are reliable, and are described sufficiently to permit replication, with research methods that provide a qualitative, albeit reliable, view of the complexity and the process involved in imparting reading concepts to children of varying abilities in classrooms. The question is NOT whether quantitative, hypothesis-driven research methods are more powerful than descriptive methodologies embodied in ethnographic studies, case histories, or classroom observation studies. The question we must ask and answer is WHICH COMBINATIONS OF RESEARCH METHODS AND APPROACHES ARE MOST APPROPRIATE FOR WHICH SPECIFIC RESEARCH QUESTIONS. Likewise, instructional questions that reflect an either-or phonics/whole language reading program choice must be replaced by questions that embrace the complexity of reading instruction. For example, FOR WHICH CHILDREN, ARE WHICH READING INSTRUCTION MODELS/ APPROACHES/METHODS MOST BENEFICIAL AT WHICH STAGES OF READING DEVELOPMENT AND IN WHICH CLASSROOM ENVIRONMENTS.

To answer these questions, our research efforts must include longitudinal studies to capture the changes over time that our children will demonstrate during instruction and that will provide us with an appropriate window on instructional issues related to intensity, duration, timing of different approaches, and contextual-decontextual influences on the development of critical reading behaviors. The investment in our research efforts must certainly be commensurate with the cost of conducting multi-method, multi-level, multi-trait longitudinal studies that have the capability of accounting for the multiple interacting factors that comprise the learning to read process.

Thank you for your time.